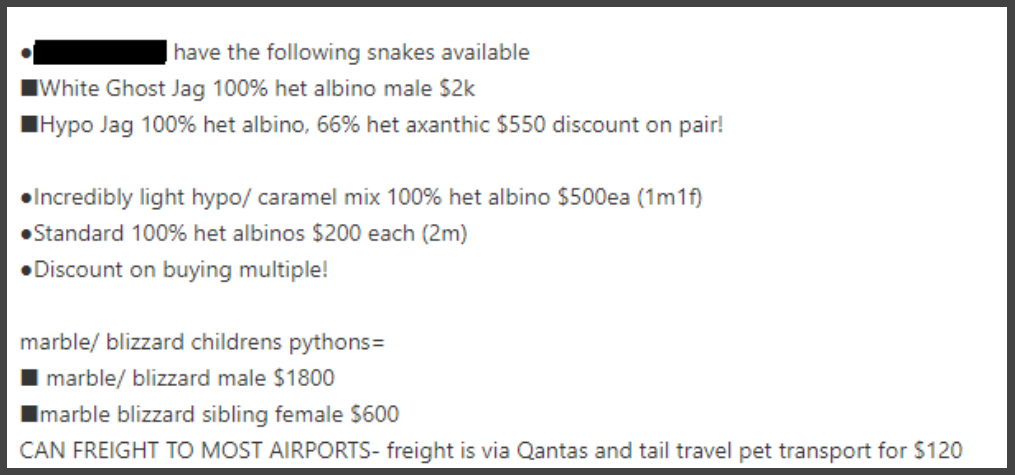
Legal Snakes Ownership in SA

This page should help you at least grasp a concept of how snakes are identified and sold in Australia.

To understand reptiles in general for sale, you must have some concept of genetics, as this dictates price.

First lets take this gumtree advertisement:

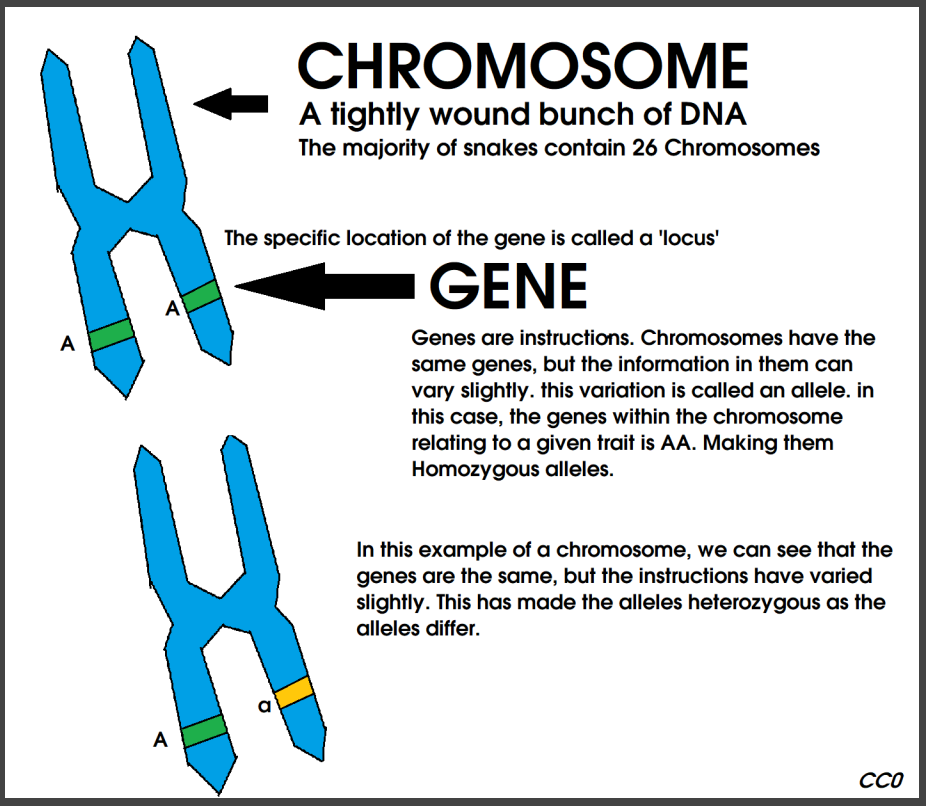


These snakes the same age, one $2,000 and the other $200. A 1m snake for $500 and a 2m snake for $200. This is all due to the genetics of the snake.

Understanding genes, morphs and variations in snakes

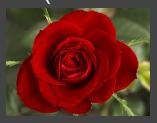
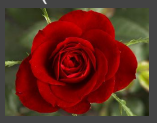
Genes dictate the appearance, health and breeding ability of any snake and it's important to understand how these genes work and vary.

A variation of a gene within any given chromosome is known as an **allele**. Technically, animals (and plants) have two sets of chromosomes, one from each parent. Linked to these chromosomes are genes, and those genes vary. That variability is called an *allele*.

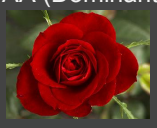
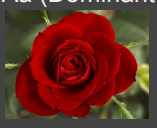


If two alleles are identical (AA) the animal is *homo*zygous. If they are different, (Aa) it is ***het***erozygous (het). **Recessive genes** are *alleles* that require two copies to express a trait. It will only appear if both genes are recessive. A **dominant gene** on the other hand, will appear if that gene is present.

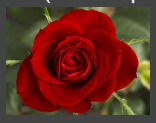
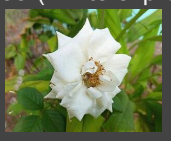
For example, if both parents have Aa (het), the dominant gene will often triumph over a recessive one, though there's still a chance of the recessive trait being expressed. We will use coloured flowers as an example, but snake morphs work fundamentally the same.

(Parents in blue and red)	A (Dominant) 	a (recessive) 
A (Dominant) 	AA (Dominant expressed) 	Aa (Dominant expressed) 
a (recessive) 	Aa (Dominant expressed) 	aa (recessive expressed) 

If one parent is Aa (white carrier, het) and the other AA (100% red carrier), there is no chance of the recessive gene being expressed

(Parents in blue and red)	A (Dominant) 	A (Dominant) 
A (Dominant) 	AA (Dominant expressed) 	Aa (Dominant expressed) 
a (recessive) 	Aa (Dominant expressed) 	Aa (Dominant expressed) 

If a gene is an Incomplete dominant it is dominant to an equal level over another variation. When a snake (or flower) has two incomplete dominant traits the resulting animal is a blend of both traits

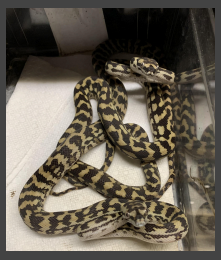
(Parents in blue and red)	A (Incomplete dominant) 	a (Incomplete dominant) 
A (Incomplete dominant) 	AA (Red expressed) 	Aa (Incomplete dominant expressed) 
a (Incomplete dominant) 	Aa (Incomplete dominant expressed) 	aa (White expressed) 

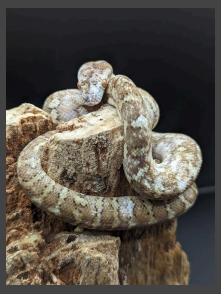
Polygenic traits are influenced by multiple genes, often located on different chromosomes. Each of these genes can have multiple alleles, and these multiple variations combine to produce a range of variation.

Examples in humans:

Dominant Genes: Brunette Hair - Will often dominate over other hair colours
Recessive Genes: Red Hair - Will often not be expressed when paired with another hair colour
Incomplete Dominant Genes: Wavy hair. Wavy hair exists as the variation expressed due to incomplete dominance of curly or straightness in hair.
Polygenic Traits: Skin tone. many genes contribute producing a variation of skin tones.

In carpet pythons, the following genetic variations or ‘morphs’ are known

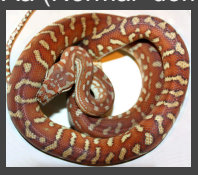
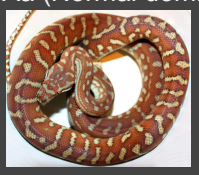
Image	Pattern Variations	Type	Image
	Jaguar or ‘jag’ Refers to pattern mutation	Incomplete Dominant	
	Tiger	Polygenic	
	Caramel	Incomplete Dominant	
	Axanthic	Recessive	
	Albino	Recessive	
	Red / ‘Red Coastal’	Polygenic	
	Hypo	Incomplete Dominant	

	granite	Recessive	
	paradox	*Other?*	
	Zebra	Incomplete Dominant	

So to use the above examples, here is a table expressing a blend between two animals

A is expressed as the dominant gene Hypo
a represents the recessive gene Albino

If we cross an animal that expresses a recessive gene, and an animal which has never carried that gene with a dominant trait, no recessive trait will show

(Parents in blue and red)	A Normal (Dominant) 	A Normal (Dominant) 
a Albino (recessive) 	Aa (Normal dominant expressed) 	Aa (Normal dominant expressed) 
a Albino (recessive) 	Aa (Normal dominant expressed) 	Aa (Normal dominant expressed) 

However, if we cross an animal that is 100% het albino (100% chance of carrying the recessive gene) but does not express it, we have a 50/50 chance of having a recessive trait.

(Parents in blue and red)	A Normal (Dominant) 	a Albino (recessive) 
a Albino (recessive) 	Aa (Normal dominant expressed) 	aa Albino (recessive expressed) 
a Albino (recessive) 	Aa (Normal dominant expressed) 	aa Albino (recessive expressed) 

As we can see, even the animals which have expressed the dominant gene, they still have heterozygous alleles (Aa).

To further complicate the subject, it has been proven in pythons that separate genes control the traits for colour and pattern. This allows for pattern variations to be altered independently of colour variations such as albinism. An ‘albino carpet python’ is usually a carpet python which expresses the albino colour variation, and the normal pattern variation. The following example shows how pattern and colour can be bred individually:

What we are trying to achieve is a snake with the genetics of aC, being an axanthic caramel.
We currently have two snakes, an axanthic with normal patterning, and a normal colour with caramel patterning

Alleles relating to pattern:
C = Caramel, a pattern variation (dominant)
c = Normal pattern variation

Alleles relating to Colour:
A = Normal colour variation (dominant)
a = Axanthic colour variation

Generation 1:

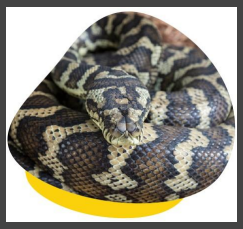
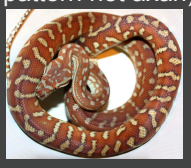
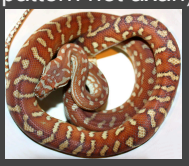
The first step would be to breed those two snakes, resulting in a snake which carries all of the genes, ie, AaCc. Only the Normal colour variation, with caramel patterning would be expressed as they are the dominant traits.

(Parents in blue and red)	AC Caramel (Incomplete Dominant) 	AC Caramel (Incomplete Dominant) 
ac Axanthic (recessive) 	AaCc (Caramel normal het axanthic) 	AaCc (Caramel normal het axanthic) 
ac Axanthic (recessive) 	AaCc (Caramel normal het axanthic) 	AaCc (Caramel normal het axanthic) 

Generation 2:
Now lets breed the individuals of that last generation (AaCc x AaCc).
AaCc introduces the following possible genes: AC (Normal colour, Caramel pattern), Ac (Normal colour, normal pattern), aC (Axanthic caramel - the goal) and ac (Axanthic normal)

The table now spans 16 offspring, as two separate traits could be possible:

Different colours denote each parent, and the traits they have inherited (AaCc contains genes for all parents)	AC (norm caramel) 	Ac (default) 	aC (Axanthic caramel / ghost) 	ac (axanthic normal) 
AC (norm caramel) 	AACC (norm coloured caramel) 	AACc (norm coloured caramel het norm pattern) 	AaCC (caramel het axan) 	AaCc (Norm coloured caramel het norm pattern het axan) 
Ac (normal)	AACc (norm coloured caramel het norm pattern)	AAcc (Norm coloured norm patterned)	AaCc (caramel het norm pattern het axan)	Aacc (norm pattern het axan)

				
aC (Axanthic caramel / ghost) 	AaCC (Norm coloured caramel het axan) 	AaCc (Norm coloured caramel het norm pattern het axan) 	aaCC (‘pure’ ghost: axan & caramel) 	aaCc (ghost: axan & caramel het normal patterning) 
ac (axanthic normal) 	AaCc (Norm coloured caramel het norm pattern het axan) 	Aacc (Norm coloured norm patterned het axan) 	aaCc (ghost: axan & caramel het normal patterning) 	aacc (axanthic normal) 

This table shows us if we breed an axanthic colour (recessive) with a caramel pattern (dominant), then, breed their offspring is bred (AaCc x AaCc) then there is:

Resulting offspring:
1/16 AACC (Normal colour, caramel patterned) |
2/16 AACc (Normal colour, caramel patterned carrying the normal pattern gene) |
1/16 AAcc (normal colour, with normal patterning) |
2/16 AaCC (Normal colour, caramel patterned carrying the normal axanthic gene) |
4/16 AaCc (Normal coloured caramel patterned carrying the normal pattern and axanthic colour gene) |
2/16 Aacc (Normal colour with normal patterns carrying the axanthic gene) |
1/16 aaCC (**Ghost python** carrying only the caramel and axanthic gene) |
2/16 aaCc (**Ghost python** carrying a het gene of normal) |
1/16 aacc (Axanthic python with normal patterning).

9/16 chance of a caramel patterned, normal coloured snake, of which 6 will carry a het trait.
3/16 chance of a normal patterned, normal coloured snake, of which 2 will carry a het trait.
3/16 chance of a “Ghost Python”, being a Caramel patterned, axanthic coloured snake.
1/16 chance of a normal patterned axanthic coloured snake.

Generation 3:
Now that we have some ghost exhibiting pythons, we can breed them to reinforce their genetics aaCc x aaCc

C = dominant caramel
c = regressive normal
A = axanthic

(Parents in blue and red)	aC Ghost 	ac Axanthic normal 
aC Ghost 	aC Ghost 	aC Ghost 
ac Axanthic normal 	aC Ghost 	ac Axanthic normal 

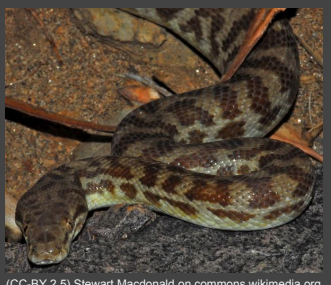
Other known pattern variations include:
Snow - being a blend of Albinism and axanthic
Moonglow - being a hypo, which is albino and axanthic

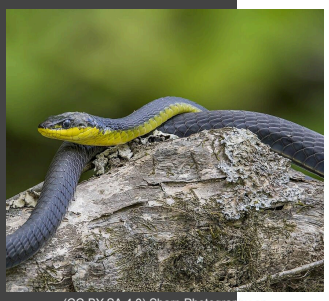
There's a good calculator for understanding how these genes combine and work here.

Legal snakes and Reptiles

In South Australia we have specific laws regulating reptile ownership. For more information see here

The following is a list of snakes which are legal in the trade in South Australia under the Basic classification

 (CC-BY 2.5) Kakadu NT on commons.wikimedia.org	 (CC-BY 2.5) Stewart Macdonald on commons.wikimedia.org	 (CC-BY 2.5) Stewart Macdonald on commons.wikimedia.org	 (CC-BY 2.5) Dawson on commons.wikimedia.org
Antaresia childreni	Antaresia maculosa	Antaresia stimsoni	Aspidites melanocephalus
Childrens python	Spotted python *(aka 'mac')*	Stimson's python *(aka 'stimmy')*	Black-headed python
'T+ Albino', Marble, Granite	Tableland, Platinum, Granite	Broome, NSW, Pygmy Banded, T+, Tennant Creek, Wheatbelt	Swiss Line, Western
$250 - $450	$250 - $1200	$250 - $900	$400 - $800
M05582	C05609	G02619	Q02612

 (CC-BY 2.5) Krossbow on commons.wikimedia.org	 (GFDL 1.2 or later) Mark Kempen on commons.wikimedia.org	 (CC-BY-SA 4.0) Scole01 on commons.wikimedia.org	 (CC-BY-SA 4.0) Sharp Photography on commons.wikimedia.org
Aspidites ramsayi	Boiga irregularis	Dendrelaphis calligastra	Dendrelaphis punctulatus
Woma	Brown tree snake	Northern tree snake	Common (green) tree snake
South Australian, Sandfire, Pilbara, RHS, Uluru	Brown, Yellow, Green, Patterned	Olive green, brown, blue-green, patterned	Green, blue, brown, black, patterned
$300 - $800	$400		
S02613	U02630	A02632	C02633

 (CC-BY-SA 4.0) Sheba_Also on commons.wikimedia.org	 (CC-BY-SA 4.0) Tylwyth Eldar on commons.wikimedia.org	 (CC-BY-SA 4.0) Pelagic on commons.wikimedia.org	 (CC-BY-SA 4.0) Reptilefact on commons.wikimedia.org
Liasis fuscus	Liasis olivaceus	Morelia bredli	Morelia carinata
Water python	Olive python	Centralian carpet python	Rough-scaled python
Golden, Patterned	Typical	Typical. Hypo	
Q02620	S02621	W05607	A05608

 (CC-BY-SA 3.0) Haplochromis on commons.wikimedia.org		 This image is in the public domain
Morelia spilota	Stegonotus cucullatus	Tropidonophis mairii
Carpet python	Slaty-grey snake	Keelback snake
C02625	M02638	K02629

Health and psychological issues

If any snake is physically ill or displaying signs it may be sick, isolate it from any other reptiles you may own.

Stereotypy is a psychological condition which involves repetitive movement, such as pacing, repeated head bobbing, nose rubbing, circling, corkscrewing or other hyperactivity. Stereotypy is not unique to snakes, and is exhibited in many animals. These behaviours arise due to stress, most often from inadequate living conditions. If

your animal is exhibiting Stereotypy, you must amend its living conditions immediately.

Burn marks occur on snakes where their enclosure does not have adequate protection from heat sources.

Respiratory infections symptoms include wheezing, labored breathing, nasal discharge and mouth gaping. It is caused by bacteria, virus or fungi. This is often linked to inadequate temperature or humidity levels in their living environment. It can be treated by slightly raising the temperature (carefully ensuring not to overheat the animal) and maintain your humidity levels.

Shedding issues can be resolved with adequate humidity, hydration and overall good health. Retained eye caps or patches of unshed skin are normal.

Obesity can result in bigger health issues. Overfeeding and lack of exercise are the main contributors.

Stomatitis symptoms include swelling, pus and dead tissue in the mouth. Stomatitis is a necrotic disease of the mouth and gums caused by a bacterial infection. It is often caused by stress, injury, or, as above, inadequate temperature or humidity levels in their living environment. This is best to be looked at by a vet as antibiotics are generally not available to the handler.

Parasitic infections symptoms include lethargy, weight loss and potentially visible mites or ticks on the animal. Parasites are common in wild animals but uncommon in captive ones.

Abscesses can occur on snakes, usually from an infection secondary to an injury. A proper vet should be consulted if a snake develops an abscess.